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ABSTRACT

Designed to identify promising methods of teaching library reference skills to elementary school students, this study included an extensive search of the literature and a pilot experiment to test the effectiveness of the methods identified. Testing materials, a transparency lecture series, and a self-paced instructional module with cassette tape were developed to meet the objective of teaching heterogenously-grouped fifth and sixth grade students how to use an almanac. Following a pretest, the skill was taught by lecture to the control group and by self-paced instruction to the experimental group. Post-test scores were compared statistically. Each method had distinct advantages for certain types of students, but neither was significantly better than the other. The report presents hypotheses, assumptions, and definitions; explains the methods of data collection; and analyzes and interprets the data. Appendices include testing materials, instructional materials, and frequency distributions of scores. A bibliography lists 31 sources. (Author/PM)

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THE EFFECTIVENESS OF SELF-PACED INSTRUCTION IN TEACHING REFERENCE SKILLS TO HETEROGENOUSLY-GROUPED ELEMENTARY SCHOOL STUDENTS

by

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Submitted to the Committee on
Independent Study and Research
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THE EFFECTIVENESS OF SELF-PACED INSTRUCTION IN TEACHING REFERENCE SKILLS TO HETEROGENOUSLY-GROUPED ELEMENTARY SCHOOL STUDENTS

I. STATEMENT OF THE PROBLEM

Most elementary schools in the United States offer some program of library skills instruction. Often this program is offered as a "special subject" in the same category as art, music and gym; occasionally the library skills are integrated into the curriculum. Whatever the form of organization, the bulk of the librarian's time and energy goes into this library skills instruction program. Journal articles on new teaching techniques abound, however there is a dearth of literature on the objective evaluation of bibliographic instruction, especially at the elementary level. In addition, complaints such as this are heard when these carefully-instructed students reach high school and college libraries:

> Why after eight years of library use instruction in the elementary school, do so many students seem unable to integrate what they have learned about the library media center into their research and study needs?[1]

There is an obvious need for elementary librarians to examine and to revise their instruction programs to improve student achievement, retention and application of library reference skills. Objective

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[1] Jo Anne Nordling, "The High School Library and the Classroom: Closing the Gap," in Progress in Educating the Library User, ed. by John Lubans, Jr. (New York: R.R. Bowker, 1978) p. 45.

evaluation of instructional methods will help the librarian to channel the resources of this instructional system more effectively.

The students at Bridgeport and Swedeland Elementary Schools in Upper Merion School District, King of Prussia, Pennsylvania receive library skills instruction for forty minutes per week. Approximately ten minutes of this time is reserved for personal book selection and research. Classes visit the library in heterogenous groups of from fifteen to twenty-five students. The range of reading abilities in a fifth or sixth grade group may encompass four or more grade levels. The lecture method has been the most frequent mode of instruction, supplemented by transparencies and worksheets. Hands-on instruction, the actual use of reference tools by each student, is utilized as time and material constraints permit. Disadvantages of the large group lecture method include a low level of student participation in the instruction and the difficulty of allowing for individual learning rates. The resulting low performance in use of reference skills in the upper grades is of great concern to the staff of one professional, who is shared by both schools, and two paraprofessionals, one stationed full-time at each building. An excellent curriculum guide stating goals, terminal objectives and enabling objectives for each level of instruction has been developed by the district's library media staff.[2] The problem at hand is to find the most effective means of accomplishing these objectives for the fifth- and sixth-graders at Bridgeport and Swedeland Elementary Schools.

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[2]Doris L. Freeman, et al., Action and Interaction: An Elementary Library Media Program, Educational Resources Information Center, ED 161 437 (King of Prussia, Pennsylvania: Upper Merion Area School District, 1977).

The purpose of this proposed research was to identify promising methods of bibliographic instruction through an extensive search of the literature and to conduct a pilot experiment testing their effectiveness for this specific population of students. The conclusions reached will form the basis for revision of the existing instructional program to better accomplish the goals and objectives set forth in the program guide.

A preliminary search of the literature in this field for evaluative studies brought results best summarized by the following:

> Advances in the philosophy and techniques of reader instruction have been made on the basis of intuition and incomplete subjective assessment rather than as the result of systematic research.[3]

> Library research, until quite recently, has not matched the rigor and sophistication of the research conducted in more established disciplines. This observation may explain, but certainly not excuse, the paucity of significant research on library user education.[4]

All major available studies comparing methods of user instruction deal with students at the college level. A pilot project conducted by Patricia Knapp at Monteith College in the early 1960's experimented with integrating library-based assignments into all areas of the curriculum. There was no conclusive evaluation of the results in terms of improving students skills in searching library resources. Thomas Kirk (1971) compared two methods of instructing

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[3] J.G. Brewer and P.J. Hills, "Evaluation of Reader Instruction," Libri 26 (1976): 64.

[4] John Lubans, ed., Progress in Educating the Library User, (New York: R.R. Bowker, 1978) p. 15.

[5] Patricia Knapp, The Monteith College Library Experiment, (New York: Scarecrow Press, 1966).

biology students in reference skills: 1) A lecture/demonstration by the librarian and 2) a self-paced guided exercise completed individually by students in the library. Identical information was presented in both cases. Of four sets of evaluative results, three showed no significant difference in skills improvement between the two groups, and the fourth showed the self-paced exercise group to be significantly better at a low .20 level of confidence.[6] A later study by Frank Kuo (1973) expanded Kirk's research.

> This study was designed to investigate the instructional effectiveness of six methods of library instruction. University students were randomly assigned to treatment groups, received verbal instruction with/without supplementary visual illustrations and readings. Results indicated that the self-paced audiovisual tutorial study followed by a summary and question/answer session was the most effective way of increasing student achievement on the ninety-item objective test designed to measure the comprehension and retention of the content.[7]

Mastery of skills by disadvantaged students at Brooklyn College was investigated by Patricia Breivik (1977) who compared weekly course-related instruction with the traditional tour and lecture. The students receiving the weekly instruction showed the most improvement in the ability to apply research skills in producing a term paper.

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[6]Thomas Kirk, "A Comparison of Two Methods of Library Instruction for Students in Introductory Biology," College and Research Libraries 32 (November 1971): p. 473.

[7]Frank F. Kuo, "A Comparison of Six Versions of Science Library Instruction," College and Research Libraries 34 (July 1973): p. 287.

The lecture/tour group made less improvement than a control group of students who received no instruction whatsoever in library skills.[8] College students studied by Marvin Wiggins (1972) received either taped programmed instruction or a nonprogrammed written summation of the same material. The programmed instruction group showed significantly more improvement as measured by a written post-test at the .01 level of significance.[9] Based on these studies, it was decided to use some form of self-paced instruction as the experimental treatment in this project.

Self-paced instruction possesses many characteristics which would seem to suit the learning environment at Bridgeport and Swedeland Schools. A variety of learning rates can be accommodated, and students will by definition be directly involved with the instruction. Inclusion of detailed objectives will tell the learner what is expected, pre-tests, self-tests and post-tests will provide constant feedback; and the student will not be hampered by the fear of having failures made known to the class. Multiple resources for learning each concept can be provided to allow for the different ways in which students learn. Once the instructional material is written, it can be duplicated for as many students as necessary and will be readily available when needed. The librarian would have more instruction time to spend working with individual students as opposed to the large blocks of time which are tied up by large group sessions. Motivation to learn could be improved

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[8] Patricia Senn Breivik, Open Admissions and the Academic Library, (Chicago: American Library Association, 1977) p. 57.

[9] Marvin E. Wiggins, "The Development of Library Use Instructional Programs," College and Research Libraries 33 (November 1972): p. 478.

by limiting all programmed learning material to small, manageable segments which would be challenging but not overwhelming and by the prospect of free time for browsing and reading once the allotted units have been successfully completed. In theory, self-paced instruction appeared to be a reasonable alternative to the lecture/demonstration method for teaching reference skills in the situation at hand. An objective test of its effectiveness would now be designed and carried out.

II. HYPOTHESES, ASSUMPTIONS AND DEFINITIONS

All other things being equal, fifth- and sixth-graders instructed in reference skills using individualized self-paced instructional materials will show significantly more improvement as measured by a written post-test than students instructed by the lecture demonstration method and retain more of the material learned after a period of two weeks as measured by a second written post-test.

It is assumed that all students come from the same population and that none of the students are receiving instruction in library skills from any other source.

"Reference skills" shall mean the location of information using an encyclopedia, dictionary, almanac, atlas, special fact book or periodical index.

"Individualized self-paced instructional material" shall mean a printed unit of instruction incorporating goals, objectives, pretest, self-tests and post-test and offering multiple resources for learning a given concept. Material shall be designed to be completed at the student's own speed.

"Lecture/demonstration" shall mean an oral presentation supplemented by visuals such as transparencies and demonstration of reference book use by the librarian.

III. METHODS OF DATA COLLECTION

The data to be collected includes the following:

1. Age, sex, I.Q. and achievement test scores of all students in the sample.

2. Scores on written pre-test administered prior to instruction.

3. Scores on written post-test administered immediately following instruction.

4. Scores on written post-test administered 2 weeks following instruction.

See Figure 1 for sample data collection sheet.

FIG. 1: data collection sheet

DATA COLLECTION SHEET		Group_____		Sample_____	Control_____		
Name	Sex	Age in Mos.	I.Q.	Ach. Test	Pretest	$Posttest_1$	$Posttest_2$

INSTRUCTIONAL OBJECTIVES

The district library skills cirriculum contains many objectives in the area of reference skills. The objective of using an almanac was selected as the almanac's a book likely to be encountered in adult life and covers material which is of interest to students now. As stated

in the curriculum, the objective to be taught and tested is, "The student will be able to select and use an almanac."[10]

In order to design testing and instructional materials, the objective was broken down into three enabling objectives:

1. Given a list of 10 questions, the student will decide with 80% accuracy if they can best be answered using an almanac.
2. Given a list of 5 questions, the student will use the almanac index to determine the page on which each answer is likely to be located with 80% accuracy.
3. Given a list of 5 questions and copies of two types of almanac tables containing the desired information, the student will locate the answers to those questions with 80% accuracy.

TESTING MATERIALS

Three tests were designed to test these objectives. Each test consisted of three sections corresponding to the three enabling objectives with ten, five and five questions respectively. Enough test items for three tests were formulated for the first test section. The test items were written individually on 3x5 cards, then shuffled and randomly sorted into three piles, one for each test. This procedure was repeated for the remaining two objectives. The result was three tests with identical instructions and format, but different content. These were randomly designated as "Pre-Test", "Post-Test" and "Review Test."[11] Portions of the "General Index" plus several charts and tables were photo-copied from The World Almanac and Book of Facts, 1980 for use in answering the test questions as not enough identical almanacs

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[10] Freeman., Obj. 3-3-C.

[11] See Appendix A for Testing Materials.

were available for use by an entire class. The testing materials now being ready, it was time to design the instructional program which would enable the students to meet the test objectives.

The Pre-Test was given to a fifth- and a sixth-grade class not included in, but similar to the classes to be included in the sample. This yielded an opportunity to check for misleading questions and instructions as well as to see which objectives would prove to be the most difficult for students to meet. Performance on the first section of the test was found to be good; it appeared that many students were already familiar with the uses of an almanac. The second two sections, measuring the ability to use the index and ability to use charts and tables, gave the average student extreme difficulties. The ignorance of index main entries and sub-headings seemed to be a wide-spread problem. The instructional program would be designed to remediate these specific weaknesses.

INSTRUCTIONAL MATERIALS

The outline of the instructional program was constructed as follows:

I. Objectives and Instructions
II. Deciding to Use an Almanac
    A. What is an almanac?
    B. What can I find in an almanac?
    C. What can't I find in an almanac?
III. Finding the Correct Page in an Almanac
    A. Find the index
    B. Decide what to look under
    C. Use the sub-headings
IV. Using Almanac Tables
    A. Following instructions
    B. Using the rows and columns
V. Review

Using this outline, a series of illustrations, instructions and questions for feedback was compiled. These were duplicated on thermal transparencies for the lecture and on paper for the self-paced material.[12] The instructions and questions were recorded on cassette tape as an optional aid for students using the printed materials. This was necessary for a number of students with learning or language difficulties. The materials were also checked for reading level using the Fry Readability Scale and were found to be at the fourth-grade level. This low level was deemed necessary for independent use by slow fifth-grade readers.

SAMPLE SELECTION

Classes available for instruction and testing included two fifth grades, each with approximately 15 students, and two sixth grades, with about 25 students each. The two fifth grades were compared with each other on mean age, I.Q.[13] and achievement test scores.[14] A t-test showed no significant difference between the classes on any of these factors. Both classes had about the same ratio of boys and girls. The sixth grades were compared in a similar fashion with the same result. It was therefore concluded that all samples were drawn from the same population.

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[12] See Appendix B for Instructional Materials.

[13] Developmental I.Q. from Otis-Lennon Mental Ability Test, Elementary 2, Form J.

[14] Achievement test score used was National Stanine for total battery of the Stanford Achievement Test, Primary 3, Form A, 1973 ed.

One fifth grade and one sixth grade each were picked for the experimental and control group. Because some of the classes meet in the morning and some in the afternoon, a morning and an afternoon class were included in both groups to equalize any possible effects of the different class times (10:35 A.M. and 12:15 P.M.) on the learning process.

Between the time the samples were selected and the time the pre-test was administered, five of the students in one fifth-grade class withdrew from school. The now unbalanced samples were equalized by matching the remaining students on age, sex, I.Q. and achievement test scores. Students who could not be matched were dropped from the sample. On the pre-test, five sixth-grade students were caught cheating. They were dropped from the sample and the remaining sixth-graders were matched on the same factors as the fifth-grade. These adjustments resulted in 11 usable scores for each fifth grade and 15 usable scores for each sixth grade.

PRE-TESTING

The Pre-test was given to all four classes. The fifth-graders scored an average of 12 points out of 20 possible points. A T-test performed at the .05 level with 20 degrees of freedom showed all fifth-graders to be of the same population for the pre-test. Before the cheating by some sixth-graders was discovered and corrected, one group had a mean of 13.55 while the other group averaged 11.65, a significant difference. After dropping the cheaters and their matches from the sample, the means were 12.7 and 11.4 respectively: A T-test at .05, 28 degrees of freedom, showed this to be an insignificant difference. It was

concluded that all samples were from the same population as shown by the pre-test.[15]

Since classes met once a week, instruction began the week following the pretest. Pretests were returned to students and it was explained that this lesson should help them perform better on a similar test.

All instruction took place in the library on Mondays and Tuesdays at 10:35 A.M. or 12:15 P.M. The lectures took two weeks to complete, and the post-test was administered on the third week after a short review. Students using the self-paced material took from one to three weeks to finish the material and took the post-test as soon as they were ready. Enough almanacs were available for each student to use during the lecture or individual work. All questions included in the self-paced material were answered aloud by students in the control group during the lecture, and the answers were written on the transparencies for all to see. For the experimental group the librarian was available to help individual students with problems and to check question answers.

In general, the fifth-graders with their smaller classes, worked more quietly on the self-paced material and appeared more motivated than the older and more-crowded sixth-graders. Some students in both experimental classes tried to get by with only reading the material and were reluctant to do any of the exercises. The use of the cassette

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[15] See Appendix C for "Frequency Distribution of Pretest Scores."

tapes was popular, but caused some distractions and delays due to equipment failure and inappropriate use of equipment by students. (A group of sixth-graders spent 10-15 minutes using their listening center as an intercom before being discovered and put back to work.) A general observation would be that the experimental students working individually required much more supervision than the control group in their lecture setting.

IV. ANALYSIS AND INTERPRETATION OF DATA

INTRODUCTION

When all groups had completed the instructional materials and had taken the post-test, the scores were compared using a one-tailed t-test at the .05 level of confidence. Fifth-graders were compared with fifth-graders and sixth-graders with sixth-graders.[16] Due to time constraints and unforeseen interruptions in the testing process, it was decided to eliminate the planned Review Test. This test was to have been administered two weeks following the post-test to measure retention of material.

PROBLEMS ENCOUNTERED IN TESTING

In a public school environment, it is difficult to control all factors which may affect test scores. During the post-testing period, high absenteeism due to illness, truancy and participation in an assembly program made it necessary for 10% of the sixth-graders and 25% of the fifth-graders to take the post-test one week later. It is not known how the resulting lapse between instruction and testing affected the test scores.

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[16] See Appendix C, Frequency Distributions of Scores.

The seating arrangements in the library provided cramped quarters for the large sixth-grade class taking the post-test. This factor may possibly have lowered concentration and encouraged cheating. These uncontrolled factors must be considered when drawing conclusions from the post-test scores.

FIG. 2: SUMMARY OF TEST RESULTS

	Pretest($\bar{X}_1$)	Post-test($\bar{X}_2$)	Improvement($\Delta\bar{X}$)
Grade 6		EXPERIMENTAL	
N = 15	11.4	15	3.6
		CONTROL	
	12.7	16.8	4.1
Grade 5		EXPERIMENTAL	
N = 11	11.9	16.9	5.0
		CONTROL	
	12.4	16.6	4.2

Highest possible score on either test = 20.

All groups with the exception of the sixth-grade experimental (self-paced instruction) group achieved the instructional objectives with the desired 80% accuracy. Although there was no significant difference between the control and experimental group at either grade level, it is interesting to note that the self-paced instruction produced both the greatest improvement (5.0) and the least improvement (3.6). What then,

are the implications of these results for the development of library skills instruction at Bridgeport and Swedeland Elementary Schools?

The purpose of this research was to identify promising methods of bibliographic instruction through an extensive search of the literature and to conduct a pilot experiment testing their effectiveness for this specific group of students. Based on the above results, self-paced instruction would seem to be as effective as the lecture method for the small classes and slightly less effective for the larger hard-to-supervise classes at Bridgeport and Swedeland Elementary Schools. Modifications of this method may be in order for further testing in small-group situations. Other ways to improve bibliographic instruction in large group situations will have to be found, as these groups seem to lack sufficient motivation to learn effectively on their own and require more supervision than one person can possibly supply. It would be interesting to replicate this research in other elementary library situations to see if the same results occur.

Although this research did not result in marked improvement in library skills by the students instructed, it was valuable in that it gave both students and librarian experience in using another method and produced materials and tests which can be used to teach the skill of using an almanac to large groups, small groups and single students needing enrichment, reinforcement and remediation. Evaluation of self-paced instruction and other methods will be continued as time and materials permit. Efforts will be made to more completely control conditions and to provide more motivation for students working individually to acquire reference skills at the best pace and on a level suitable for the maximum number of students in heterogenously-grouped fifth and sixth grade classes.

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Appendix A

Testing Materials

1. Pretest

2. Post-test

3. Review Test

4. Index and Tables Sheet

NAME GRADE

ALMANAC - PRETEST

PART I

READ EACH OF THE QUESTIONS.

DECIDE IF THE ANSWER WOULD BE FOUND IN AN ALMANAC.

PUT AN "A" ON THE LINE NEXT TO EACH QUESTION WHICH WOULD BE FOUND IN AN ALMANAC. PUT AN "O" NEXT TO EACH QUESTION WHICH WOULD BE FOUND IN SOME OTHER BOOK.

____1. WHAT DOES THE WORD "CHINCHILLA" MEAN?

____2. WHO SAID, "A BIRD IN THE HAND IS WORTH TWO IN THE BUSH"?

____3. HOW DO YOU MAKE CHOCOLATE CHIP COOKIES?

____4. WHAT IS THE ADDRESS OF THE FEDERAL BUREAU OF INVESTIGATION?

____5. WHAT IS THE OFFICIAL LANGUAGE OF SENEGAL?

____6. WHO SAID, "GIVE ME LIBERTY OR GIVE ME DEATH"?

____7. WHICH IS THE DEEPEST LAKE IN THE UNITED STATES?

____8. HOW MANY PLACES IN THE UNITED STATES ARE NAMED "BRIDGEPORT"?

____9. WHERE IS THE SOURCE OF THE ARKANSAS RIVER?

____10. WHO SAID, "GENIUS IS ONE PERCENT INSPIRATION AND NINETY NINE PERCENT PERSPIRATION?"

PART II

USE THE INDEX ON THE "INDEX AND TABLES" PAGE TO DECIDE WHAT PAGE NUMBER THE ANSWER TO EACH QUESTION WOULD BE ON. WRITE THE PAGE NUMBER ON THE LINE NEXT TO EACH QUESTION

____1. HOW MANY PEOPLE IN THE UNITED STATES RECEIVED FOOD STAMPS IN 1976.

____2. FIND THE ADDRESS OF THE PHILADELPHIA EAGLES.

____3. HOW MANY APPLES DID THE AVERAGE AMERICAN EAT IN THE YEAR OF 1979?

____4. WHO COACHED PENN STATE'S FOOTBALL TEAM IN 1979?

PART II CONTINUED

____5. WHAT IS THE FREEZING POINT OF LIQUID OXYGEN?

PART III

USE THE TABLES ON THE "INDEX AND TABLES" PAGE TO ANSWER EACH QUESTION. WRITE THE ANSWER ON THE LINE NEXT TO THE QUESTION.

_____1. WHAT IS THE COLDEST MONTH OF THE YEAR IN BISMARK, N.D.?

_____2. WHAT COUNTRY WON THE 16-LB HAMMER THROW FOR THE LAST TWO OLYMPICS?

_____3. HOW MANY INCHES OF RAIN DOES CHICAGO, ILL. USUALLY RECEIVE IN JUNE?

_____4. WHICH MAN FROM IRELAND HAS WON THE OLYMPIC 16-LB. HAMMER THROW TWO TIMES IN A ROW. DID HE THROW THE HAMMER MORE THAN 200 FT?

_____ 5. IF THE TEMPERATURE OUTSIDE IS 10° F, HOW FAST DOES THE WIND HAVE TO BLOW TO MAKE IT FEEL LIKE -38° F?

NAME _____ GRADE _____

ALMANAC -- POST-TEST

PART I

READ EACH OF THE QUESTIONS.

DECIDE IF THE ANSWER WOULD BE FOUND IN AN ALMANAC.

PUT AN "A" ON THE LINE NEXT TO EACH QUESTION WHICH WOULD BE FOUND IN AN ALMANAC. PUT AN "O" NEXT TO EACH QUESTION WHICH WOULD BE FOUND IN SOME OTHER BOOK.

___ 1. WHERE CAN YOU FIND A PICTURE OF THE HUMAN CIRCULATORY SYSTEM?

___ 2. HOW ARE DECIMAL NUMBERS DIFFERENT FROM NUMBERS WITH FRACTIONS?

___ 3. HOW MANY U.S. DISTRICT COURT JUDGES ARE THERE IN YOUR STATE?

___ 4. HOW MANY SYNONYMS CAN YOU FIND FOR THE WORD "WIGGLE"?

___ 5. WHAT WAS THE GREATEST NUMBER OF PEOPLE EVER TO ATTEND ONE BASEBALL GAME?

___ 6. WHICH CANDIDATE FOR PRESIDENT GOT THE MOST VOTES IN PENNSYLVANIA IN 1960?

___ 7. IN WHAT YEAR WERE THE FIRST MODERN OLYMPIC GAMES HELD?

___ 8. WHERE CAN YOU FIND A SHORT BIOGRAPHY OF THE INDIAN CHIEF, GERONIMO?

___ 9. HANK AARON AND BABE RUTH HAVE HIT THE MOST RUNS IN THE MAJOR LEAGUE BASEBALL HISTORY. WHAT TWO MEN RANK THIRD AND FOURTH IN HOME RUNS?

___ 10. HOW MANY SYLLABLES ARE IN THE WORD "SCRUMPTIOUS"?

PART II

USE THE INDEX ON THE "INDEX AND TABLES" PAGE TO DECIDE WHAT PAGE NUMBER THE ANSWER TO EACH QUESTION WOULD BE ON. WRITE THE PAGE NUMBER ON THE LINE NEXT TO EACH QUESTION.

___ 1. WHICH PROFESSIONAL FOOTBALL TEAM HAS THE LARGEST STADIUM?

___ 2. WHAT IS THE ADDRESS OF THE FOOD AND DRUG ADMINISTRATION?

___ 3. HOW MUCH MONEY DID AMERICANS SPEND ON FURNITURE LAST YEAR?

___ 4. HOW MANY SUPERBOWL GAMES HAVE THE DALLAS COWBOYS PLAYED IN?

___ 5. WHAT IS THE POPULATION OF FRESNO, CALIFORNIA?

NAME GRADE

ALMANAC -- POST-TEST

PART III

USE THE TABLES ON THE "INDEX AND TABLES" PAGE TO ANSWER EACH QUESTION. WRITE THE ANSWER ON THE LINE NEXT TO THE QUESTION.

_____ 1. YOU ARE GOING TO VISIT BOSTON, MASS., IN MARCH. WHAT IS THE AVERAGE TEMPERATURE LIKELY TO BE?

_____ 2. THE TEMPERATURE OUTSIDE IS 0°F AND THE WIND IS BLOWING AT 5 MPH.. HOW COLD DOES IT FEEL?

_____ 3. HOW COLD DOES IT FEEL OUTSIDE WHEN THE WIND IS BLOWING 15 MPH., AND THE TEMPERATURE IS 20°F?

_____ 4. WHO WON THE POLE VAULT IN THE 1960 SUMMER OLYMPICS? HOW HIGH DID HE JUMP?

_____ 5. HOW MANY INCHES OF RAIN DOES ATLANTA, GEORGIA USUALLY RECEIVE IN AUGUST?

NAME _____ GRADE _____

ALMANAC -- REVIEW TEST

PART II

USE THE INDEX ON THE "INDEX AND TABLES" PAGE TO DECIDE WHAT PAGE NUMBER THE ANSWER TO EACH QUESTION WOULD BE ON. WRITE THE PAGE NUMBER ON THE LINE NEXT TO EACH QUESTION.

____ 1. HOW MUCH MEAT DID THE AVERAGE AMERICAN EAT IN 1979?

____ 2. AT WHAT ADDRESS CAN YOU WRITE TO THE DALLAS COWBOYS?

____ 3. HOW MUCH MONEY DID THE TRUCKING INDUSTRY MAKE BY SHIPPING FREIGHT LAST YEAR?

____ 4. WHO IS THE MAYOR OF FRESNO, CALIFORNIA?

____ 5. WHICH COLLEGE FOOTBALL PLAYER WON THE HEISMAN TROPHY IN 1979?

PART III

USE THE TABLES ON THE "INDEX AND TABLES" PAGE TO ANSWER EACH QUESTION. WRITE THE ANSWER ON THE LINE NEXT TO THE QUESTION.

_____ 1. WHAT IS THE AVERAGE TEMPERATURE IN CINCINNATI, OHIO FOR THE MONTH OF APRIL?

_____ 2. WHAT IS THE FURTHEST DISTANCE THAT ANYONE HAS EVER THROWN THE 16-LB. HAMMER IN THE OLYMPICS?

_____ 3. WHAT IS THE WETTEST MONTH OF THE YEAR IN FAIRBANKS, ALASKA?

_____ 4. IF THE TEMPERATURE OUTSIDE IS 30°F, HOW FAST DOES THE WIND HAVE TO BLOW TO MAKE IT FEEL BELOW 0°F?

_____ 5. WHEN WAS THE LAST TIME THAT SOMEONE FROM THE UNITED STATES WON THE OLYMPIC POLE VAULT?

NAME _____ GRADE _____

ALMANAC -- REVIEW TEST

PART I

READ EACH OF THE QUESTIONS.

DECIDE IF THE ANSWER WOULD BE FOUND IN AN ALMANAC.

PUT AN "A" ON THE LINE NEXT TO EACH QUESTION WHICH WOULD BE FOUND IN AN ALMANAC. PUT AN "O" NEXT TO EACH QUESTION WHICH WOULD BE FOUND IN SOME OTHER BOOK.

___ 1. ABOUT HOW MANY PEOPLE SPEAK ENGLISH?

___ 2. HOW DOES AN AIRPLANE FLY?

___ 3. IN U.S. CURRENCY (MONEY), WHOSE PORTRAIT IS ON THE $100 BILL?

___ 4. CAN YOU FIND THE NAMES OF TWO IMPORTANT CITIES IN ANCIENT GREECE?

___ 5. WHICH CITY HAS MORE TELEPHONES - DALLAS OR PITTSBURGH?

___ 6. HOW MANY STATES HAVE NUCLEAR POWER REACTORS?

___ 7. HOW DO VOLCANOES FORM AND WHAT MAKES THEM ERUPT?

___ 8. WHO KICKED THE LONGEST PUNT IN PRO-FOOTBALL HISTORY AND HOW FAR DID THE BALL GO?

___ 9. HOW MANY REGISTERED DRIVERS OF CARS, BUSES AND TRUCKS WERE THERE IN THE U.S. IN THE LAST YEAR LISTED?

___10. WHICH MUSICAL INSTRUMENTS ARE INCLUDED IN THE WOODWIND SECTION OF AN ORCHESTRA?

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—G—

TABLE

Pole Vault

1896	William Hoyt, United States	10ft. 9 3-4 in.
1900	Irving Baxter, United States	10ft. 9 in.
1904	Charles Dvorak, United States	11ft. 6 in.
1908	A. C. Gilbert, United States	
	Edward Cook Jr., United States	12ft. 2 in.
12	Harry Babcock, United States	12ft. 11 1-2 in.
20	Frank Foss, United States	13ft. 5 in.
24	Lee Barnes, United States	12ft. 11 1-2 in.
928	Sabin W. Carr, United States	13ft. 9 1-2 in.
1932	William Miller, United States	14ft. 1 7-8 in.
1936	Earle Meadows, United States	14ft. 3 1-4 in.
1948	Guinn Smith, United States	14ft. 1 1-4 in.
1952	Robert Richards, United States	14ft. 11 1-4 in.
1956	Robert Richards, United States	14ft. 11 1-2 in.
1960	Don Bragg, United States	15ft. 5 1-8 in.
1964	Fred Hansen, United States	16ft. 8 1-2 in.
1968	Bob Seagren, United States	17ft. 8 1-2 in.
1972	Wolfgang Nordwig, E. Germany	18ft. 1 2 in.*
1976	Tadeusz Slusarski, Poland	18ft. 1 2 in.*

16-lb. Hammer Throw

1900	John Flanagan, United States	167ft. 4 in.
1904	John Flanagan, United States	168ft. 1 in.
1908	John Flanagan, United States	170ft. 4 1-4 in.
1912	Matt McGrath, United States	179ft. 7 1-8 in.
1920	Pat Ryan, United States	172ft. 5 5-8 in.
1924	Fred Tootell, United States	174ft. 10 1-8 in.
1928	Patrick O'Callaghan, Ireland	168ft. 7 3-8 in.
1932	Patrick O'Callaghan, Ireland	176ft. 11 1-8 in.
1936	Karl Hein, Germany	185ft. 4 3-16 in.
1948	Imre Nemeth, Hungary	183ft. 11 1-2 in.
1952	Jozsef Csermak, Hungary	197ft. 11 67 in.
1956	Harold Connolly, United States	207ft. 3 1-2 in.
1960	Vasily Rudenkov, USSR	220ft. 2 in.
1964	Romuald Klim, USSR	228ft. 9 1-2 in.
1968	Gyula Zsivotsky, Hungary	240ft. 8 in.
1972	Anatoli Bondarchuk, USSR	248ft. 8 in.
1976	Yuri Sedyk, USSR	254ft. 3 3-4 in.*

TABLE

Wind Chill Table

Source: National Oceanic and Atmospheric Administration, U.S. Commerce Department

Both temperature and wind cause heat loss from body surfaces. A combination of cold and wind makes a body feel [illegible] than the actual temperature. The table shows, for example, that a temperature of 20 degrees Fahrenheit, plus a wind [illegible] miles per hour, causes a body heat loss equal to that in minus 10 degrees with no wind. In other words, the wind [illegible] degrees feel like minus 10.

Top line of figures shows actual temperatures in degrees Fahrenheit. Column at left shows wind speeds.

MPH	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	33	27	21	16	12	7	0	-5	-10	-15	-21	-26	-31	-36	-42	-47	[illegible]
10	22	16	10	3	-3	-9	-15	-22	-27	-34	-40	-46	-52	-58	-64	-71	[illegible]
15	16	9	2	-5	-11	-18	-25	-31	-38	-45	-51	-58	-65	-72	-78	-85	[illegible]
20	12	4	-3	-10	-17	-24	-31	-39	-46	-53	-60	-67	-74	-81	-88	-96	[illegible]
25	8	1	-7	-15	-22	-29	-38	-44	-51	-59	-66	-74	-81	-88	-96	-103	[illegible]
30	6	-2	-10	-18	-25	-33	-41	-49	-56	-64	-71	-79	-86	-93	-101	-109	[illegible]
35	4	-4	-12	-20	-27	-35	-43	-52	-58	-67	-74	-82	-89	-97	-105	-113	[illegible]
40	3	-5	-13	-21	-29	-37	-45	-53	-60	-69	-76	-84	-92	-100	-107	-115	[illegible]
45	2	-6	-14	-22	-30	-38	-46	-54	-62	-70	-78	-85	-93	-102	-109	-117	[illegible]

(Wind speeds greater than 45 mph have little additional chilling effect.)

TABLE

Monthly Normal Temperature and Precipitation

Source: National Oceanic and Atmospheric Administration, U.S. Commerce Department

These normals are based on records for the 30-year period 1941 to 1970 inclusive. See explanation on page 796. For stations that did not have continuous records from the same instrument site for the entire 30 years, the means have been adjusted to the record at the present site.

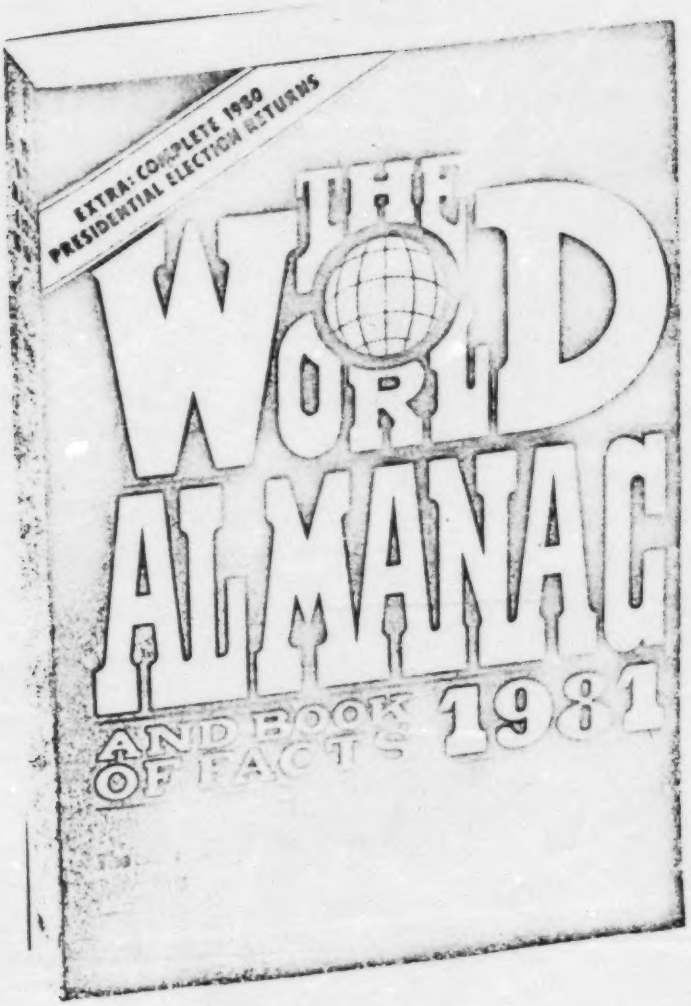
Airport stations, city office stations. T, temperature in Fahrenheit. P, precipitation in inches. T, less than .05 inch.

Station	Jan T	Jan P	Feb T	Feb P	Mar T	Mar P	Apr T	Apr P	May T	May P	June T	June P	July T	July P	Aug T	Aug P	Sept T	Sept P	Oct T	Oct P	Nov T	Nov P	Dec T	Dec P
Albany, N.Y.	22	2.2	24	2.1	33	2.8	47	2.7	58	3.1	68	3.0	72	3.1	70	2.9	62	3.1	51	2.6	40	2.6	26	2.6
Albuquerque, N.M.	35	0.5	40	0.4	46	0.6	56	0.5	66	0.5	75	0.5	78	1.1	76	1.1	68	1.0	58	0.8	45	0.5	35	0.5
Anchorage, Alas.	12	0.8	16	0.8	24	0.8	35	0.8	46	0.6	55	1.1	58	2.1	56	2.1	48	2.4	35	1.4	23	1.0	13	1.1
Asheville, N.C.	38	3.4	39	3.6	49	4.7	58	3.5	64	3.3	71	4.0	74	4.3	73	4.5	67	3.6	57	3.1	49	2.9	39	3.0
Atlanta, Ga.	42	4.4	45	4.4	53	5.0	61	4.6	69	3.7	76	3.7	78	5.1	77	4.8	71	3.5	61	2.9	51	3.4	44	4.4
Baltimore, Md.	37	2.9	39	2.8	48	3.7	58	3.1	68	3.6	77	3.6	81	3.8	79	4.1	72	3.2	61	2.8	50	2.8	40	3.1
Barrow, Alas.	15	0.7	13	0.2	15	0.2	1	0.2	19	0.2	31	0.4	39	0.7	38	1.0	30	1.4	16	0.9	1	0.3	12	0.2
Billings, Mont.	24	0.6	25	0.6	31	1.0	42	1.6	52	2.1	60	1.6	68	1.0	67	0.8	56	0.8	44	0.7	32	0.7	25	0.6
Birmingham, Ala.	44	4.6	47	5.1	53	6.2	63	4.6	71	3.6	77	4.0	80	4.2	79	4.1	73	3.0	63	2.8	53	4.2	46	5.0
Bismarck, N.D.	8	0.5	14	0.4	25	0.7	43	1.4	54	2.2	64	3.0	72	2.2	70	2.3	58	1.5	45	0.8	27	0.6	13	0.5
Boise, Ida.	29	1.4	36	1.2	41	1.0	49	1.1	57	1.3	65	1.1	75	0.2	72	0.3	63	0.4	52	0.8	40	1.3	32	1.4
Boston, Mass.	29	3.7	30	3.5	38	4.0	48	3.5	58	3.5	68	3.2	73	3.7	71	3.5	65	3.3	52	3.9	40	3.7	29	4.0
Buffalo, N.Y.	24	2.8	24	2.6	32	2.8	45	3.2	55	3.0	66	2.2	70	2.9	68	3.5	62	3.3	52	3.0	40	3.1	28	3.1
Burlington, Vt.	21	1.7	19	1.7	29	1.8	43	2.6	55	3.0	65	3.5	70	3.5	67	3.7	59	3.6	49	3.1	37	2.9	26	2.6
Caribou, Me.	11	2.0	13	2.1	24	2.2	37	2.4	50	3.0	60	3.4	65	4.0	62	3.8	54	3.5	44	3.1	30	2.1	18	1.9
Charleston, S.C.	49	3.9	51	3.3	57	4.8	65	3.0	72	3.8	78	6.3	80	8.2	80	6.4	75	5.2	66	3.0	55	2.6	49	2.2
Chicago, Ill.	24	1.8	27	1.6	37	2.7	50	3.8	60	3.4	70	4.0	75	3.8	73	3.0	66	2.7	56	2.2	45	3.1	34	2.1
Cincinnati, Ohio	32	3.4	34	3.0	43	4.1	55	3.9	64	4.0	73	3.9	76	4.0	75	3.0	68	2.8	58	2.6	47	3.0	36	3.4
Cleveland, Ohio	27	2.6	28	2.2	36	3.1	48	3.5	58	3.5	68	3.3	72	3.5	70	3.4	64	2.9	54	2.9	42	2.6	31	2.4
Columbia, S.C.	48	2.9	50	2.3	58	3.4	67	3.1	74	4.2	80	4.1	82	5.1	81	4.6	76	3.3	65	2.2	55	2.6	48	2.7
Dallas, Tex.	45	2.0	49	2.6	58	3.0	66	4.7	74	4.9	82	3.3	86	1.8	86	2.4	78	3.3	68	3.2	56	2.6	48	2.4
Denver, Colo.	30	0.6	33	0.7	37	1.2	48	1.9	57	2.6	66	1.9	73	1.8	72	1.3	63	1.1	54	0.8	41	0.8	34	0.5
Des Moines, Iowa	19	1.0	24	1.1	34	2.3	50	2.9	61	4.2	71	4.9	75	3.3	73	3.1	64	3.1	54	2.5	41	2.1	27	1.2
Detroit, Mich.	26	1.9	27	1.8	35	2.3	48	3.1	58	3.4	68	3.0	73	3.0	71	3.1	64	2.6	54	2.7	43	2.6	33	2.2
Dodge City, Kans.	31	0.5	35	0.6	41	1.1	54	1.1	64	3.1	74	3.1	79	2.4	77	2.1	68	1.8	58	1.1	45	0.8	34	0.5
Duluth, Minn.	9	1.2	12	0.9	24	1.6	38	2.6	49	3.4	59	4.4	65	3.7	63	3.5	54	3.2	42	2.5	27	1.7	14	1.4
Eureka, Calif.	47	7.4	46	5.2	48	4.8	50	3.0	53	2.1	55	0.7	56	0.1	57	0.1	57	0.4	54	1.1	49	3.7	46	6.1
Fairbanks, Alas.	12	0.8	3	0.5	13	0.5	29	0.3	47	0.7	59	1.4	61	1.9	55	2.4	44	1.1	25	0.7	3	0.6	4	0.7
Fort Worth, Tex.	46	1.8	49	2.4	58	2.5	68	4.1	75	4.5	83	2.1	85	1.6	85	2.1	78	2.2	68	2.7	58	2.0	48	1.7
Fresno, Calif.	45	1.8	50	1.7	54	1.8	60	1.2	67	0.3	74	0.1	81	0.1	78	0.1	74	0.3	64	0.6	54	1.2	46	1.7
Galveston, Tex.	54	3.0	56	2.7	61	2.6	69	2.6	76	3.2	81	4.1	83	4.4	83	4.4	80	5.8	73	3.5	64	3.2	57	3.1
Grand Junction, Colo.	27	0.6	34	0.8	41	0.8	52	0.8	62	0.6	71	0.8	78	0.5	76	0.7	67	0.8	55	0.7	42	0.8	31	0.7
Great Falls, Mont.	21	1.0	25	1.5	33	2.5	47	3.4	57	3.2	67	3.4	77	1.1	77	0.9	66	1.0	56	1.3	45	0.8	32	0.8
Greensboro, N.C.	38	3.4	40	3.4	48	4.1	58	3.3	67	3.4	75	4.4	79	4.6	77	4.4	71	3.4	60	2.6	49	2.7	40	3.1
Hatteras, N.C.	47	3.9	47	3.6	53	4.3	61	3.1	69	3.2	76	4.1	80	5.1	80	5.1	75	4.6	66	3.2	56	3.2	49	3.5
Helena, Mont.	23	0.7	26	0.8	33	0.7	43	0.9	52	1.8	59	2.4	68	1.0	66	1.0	56	1.0	45	0.8	32	0.8	25	0.8
Honolulu, Hawaii	78	2.8	78	3.4	79	1.4	80	1.1	82	0.8	84	0.5	85	0.6	86	0.6	86	0.7	84	1.5	82	1.7	79	2.1

Appendix B

Instructional Materials

IT'S ALL IN THE



ALMANAC

I. Purpose of this lesson

Answers to many questions can be found in one book - the almanac. You will learn to use the World Almanac and amaze your friends and teachers with the facts you can find.

II. Objectives

When you finish this lesson you should be able to:

A. Decide when you need to use an almanac

B. Use the index to find the right page in the almanac for your answers

C. Find answers to questions on two kinds of almanac charts and tables

III. Instructions

1. Read the parts of this lesson which tell about the almanac

   OR

   Ask for the cassette tape which goes with the lesson and listen while you read.
2. Answer the questions at the end of each part.
3. Answer the review questions at the end. Review any parts of the lesson which you do not understand.
4. Take the test on this lesson and hand it in.
5. Use the almanac to find out many exciting things.

WHAT IS AN ALMANAC?

ALMANAC (AWL MUH NACK)

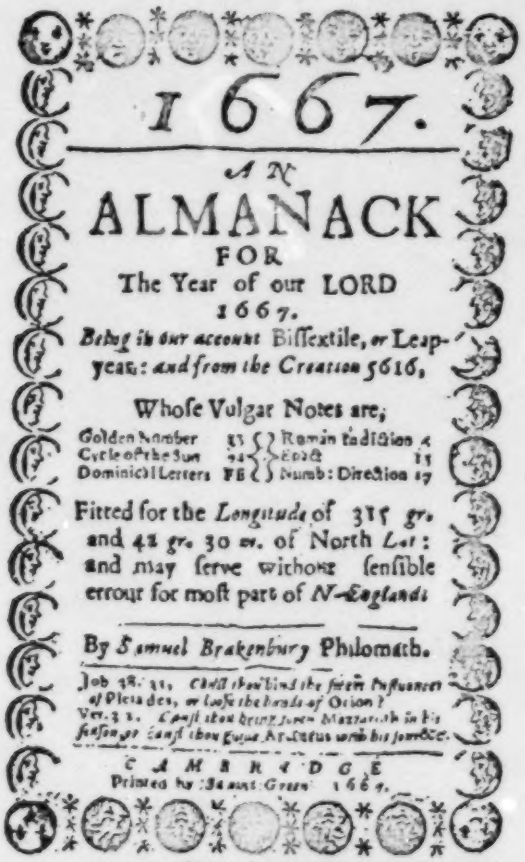
- A BOOK OR PAMPHLET PUBLISHED ONCE A YEAR THAT CONTAINS MANY KINDS OF INFORMATION
  WORLD BOOK ENCYCLOPEDIA

- A PUBLICATION CONTAINING A COLLECTION OF USEFUL OR OTHERWISE INTERESTING FACTS OR STATISTICS USUALLY IN THE FORM OF TABLES AND OFTEN COVERING THE PERIOD OF A GIVEN YEAR
  WEBSTER'S DICTIONARY

- LOOK UP THE WORD "ALMANAC" IN A DICTIONARY. WRITE THE DEFINITION HERE.
  ALMANAC_____
  _____
  _____
  _____

THE OLDEST ALMANACS WERE REALLY CALENDARS. THEY TOLD WEATHER, SUNRISE, SUNSET, OCEAN TIDES, ECLIPSES OF THE SUN AND MOON AND STAR MOVEMENTS FOR EACH MONTH. SAILORS AND FARMERS USED THEM TO DO THEIR JOBS.

HERE IS A TITLE PAGE FOR AN ALMANAC PUBLISHED IN 1667.



1667.

AN
ALMANACK
FOR
The Year of our LORD
1667.

Being the our account Bissextile, *or* Leap-year: *and from the Creation* 5616,

Whose Vulgar Notes are;

Golden Number 13 } Roman Indition 4
Cycle of the Sun 24 } Epact 13
Dominical Letters FE } Numb: Direction 17

Fitted for the *Longitude* of 315 *gr.* and 42 *gr.* 30 *m.* of North *Lat*: and may serve without sensible errour for most part of *N-England*.

By *Samuel Brakenbury* Philomath.

Job 38. 31. *Canst thou bind the sweet influences of Pleiades, or loose the bands of Orion?*
Ver. 32. *Canst thou bring forth Mazzaroth in his season? or canst thou guide Arcturus with his sonnes?*

CAMBRIDGE
Printed by *Samuel Green* 1667.

American Antiquarian Society, Worcester, Mass.

Title Page of an Almanac, printed at Cambridge, Mass., in 1667 by Samuel Green, is one of two copies known to exist. One is in the library of the American Antiquarian Society at Worcester, Mass., and the other in a private collection at Albany, N.Y.

HOW DO YOU THINK AN ALMANAC WOULD HELP A SAILOR OR A FARMER?

WHAT IS AN ALMANAC?

THE WORLD ALMANAC IS THE BEST-SELLING ALMANAC IN OUR COUNTRY. THE "QUICK REFERENCE INDEX" IN THE BACK OF THE WORLD ALMANAC SHOWS SOME OF THE SUBJECTS IT COVERS.

Quick Reference Index

Actors and Actresses
Advertising
Animals
Area Codes, Telephone
Astronomy Data, 1980
Automobiles, Trucks
Books, Best Sellers
Calendars
Congress, 1980
Consumer Affairs
Crime
Disasters
Discoveries and Inventions
Education
Elections
Energy
Film
Flags of the World (Color)
Food
History
Holidays
Income Tax, Federal
State
Maps (Color)
Meteorological Data
Metric System
National Parks
Nations of the World
Nutrition
Passports
Personalities, noted
Population, U.S.
Presidents, U.S.
Social Security
Space Flights
Sports
States of the Union
Television
Theater, Recordings, Films
United Nations
U.S. Facts
Washington, the Nation's Capital
Women in 1979
World Facts
Zip Codes

WHICH OF THESE SUBJECTS WOULD YOU LIKE TO LOOK UP?

WHAT CAN'T YOU FIND IN AN ALMANAC?

___ FACTS ABOUT THE YEAR ON THE ALMANAC COVER.
EX: 1980 SPORTS RECORDS WILL NOT BE IN THE 1980 ALMANAC. THEY WILL BE IN THE 1981

___ DICTIONARY DEFINITIONS (SPELLING, MEANINGS, PLURALS, PUNCTUATION).
USE A DICTIONARY FOR THESE.

___ LONG ANSWERS.
IF YOUR QUESTION NEEDS A LONG ANSWER, USE THE CARD CATALOG OR THE ENCYCLOPEDIA.

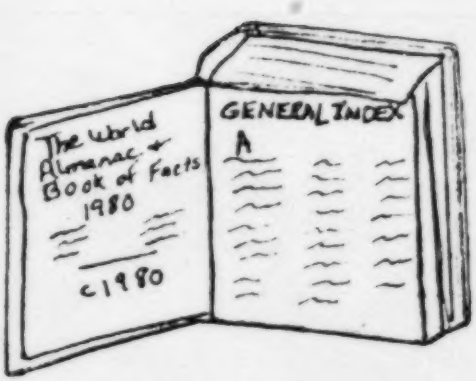
___ QUOTATIONS (SUCH AS "TO BE OR NOT TO BE")
IT IS EASIER TO USE A QUOTATION BOOK FOR THESE.

IF IN DOUBT, USE THE INDEX IN THE FRONT OF AN ALMANAC TO LOOK IT UP!

WHAT PAGE IS IT ON?

THE BEST WAY TO USE THE WORLD ALMANAC IS TO CHECK THE "GENERAL INDEX".

THE "GENERAL INDEX" IS IN THE FRONT OF THE WORLD ALMANAC. IT IS RIGHT AFTER THE TITLE PAGE.



Subjects are listed in ALPHABETICAL order. The PAGE NUMBERS for each subject are given. There is a dotted line between each subject and page number.

EX: Alaska.....678-679
(see States,U.S.)
Accession.....460
Admission, Area,Cap..458-468
Agriculture.....139-143

Many SUBJECTS have SUB-HEADINGS. These are smaller parts of that subject. SUB-HEADINGS are listed in ALPHABETICAL ORDER under each SUBJECT.

THE GENERAL INDEX

EVERY IMPORTANT ITEM IS LISTED IN THE GENERAL INDEX. MANY ITEMS ARE LISTED IN SEVERAL PLACES.

DAYLIGHT SAVINGS TIME
- DAYLIGHT SAVING TIME
- OR
- TIME - DAYLIGHT SAVING

BASEBALL WORLD SERIES
- WORLD SERIES
- OR
- BASEBALL - WORLD SERIES

YOU CAN LOOK UP A SUBJECT UNDER ANY OF THE IMPORTANT WORDS IN THAT SUBJECT. IF YOU DO NOT FIND THE SUBJECT, THINK OF ANOTHER WORD WHICH MEANS THE SAME AND LOOK THAT UP.

(Example: Apples - Fruit Films - Motion Pictures)
Rain - Precipitation

WHAT WOULD YOU LOOK UNDER FOR:

UNDERLINE THE WORDS YOU WOULD LOOK UNDER OR WRITE THEM UNDERNEATH THE QUESTION.

LOOK UP ONE OF THESE QUESTIONS IN AN ALMANAC AND CIRCLE THE WORDS YOU FIND IT UNDER.

CRUDE PETROLEUM PRODUCTION

WHEN WAS THE LAWN MOWER INVENTED?

WHOSE PICTURE IS ON THE U.S. $100 BILL?

MAIN HEADINGS AND SUBHEADINGS

THE GENERAL INDEX USES SUBHEADINGS TO DIVIDE UP SUBJECTS WHICH ARE TOO GENERAL. SUBHEADINGS ARE INDENTED UNDER THE HEADING AND ARE OFTEN IN LIGHTER PRINT. NEVER GIVE UP FINDING AN ANSWER UNTIL YOU'VE CHECKED THE SUBHEADINGS.

EX: MUSIC and MUSICIANS -

Amer. songs (popular).....383-385
Awards.....35,413,417
Composers, works.....380-382
Jazz artists.....382-383
Musicians, singers.....382-399
Opera companies.....423
Pulitzer prizes.....413-414
Recordings.....423-425
Symphony orchestras.....421-422

WHICH SUBHEADING WOULD YOU USE TO FIND:

WHO WROTE THE POPULAR SONG "TAKE ME OUT TO THE BALL GAME"?

WHERE AND WHEN WAS FAMOUS SINGER FRANK SINATRA BORN?

WHAT INSTRUMENT DID JAZZ ARTIST LOUIS ARMSTRONG PLAY?

CHARTS AND TABLES

CHARTS OR TABLES ARE USED IN THE ALMANAC TO SHOW MANY FACTS IN A SMALL SPACE.

CHARTS AND TABLES ARE ARRANGED IN ROWS AND COLUMNS. EACH ROW OR COLUMN HAS A NAME OR HEADING.

CHARTS AND TABLES HAVE A TITLE AT THE TOP. UNDER THE TITLE THERE MAY BE INSTRUCTIONS ON HOW TO USE THE CHART OR TABLE. THE INSTRUCTIONS WILL EXPLAIN THE ABBREVIATIONS USED AND USUALLY SAY WHERE THE CHART COMES FROM OR WHO MADE IT.

HURRICANES, TYPHOONS, BLIZZARDS, OTHER STORMS

Names of hurricanes and typhoons in italics-H.-hurricane; T.-typhoon

Date	Location	Deaths
1988 Mar. 11-14	Blizzard, Eastern U. S.	400
1900 Sept. 8	H. Galveston, Tex.	6,000
1926 Sept. 16-22	H. Fla. Ala.	372
1926 Oct. 20	H. Cuba	600
1928 Sept. 12-17	H. W. Indies, Fla.	4,000
1930 Sept. 3	H. San Domingo	2,000
1938 Sept. 21	H. New England	600

QUESTIONS:

1. FIND THE TITLE OF THIS TABLE AND DRAW A CIRCLE AROUND IT.
2. FIND THE INSTRUCTIONS AND UNDERLINE THEM.
3. WRITE THE HEADING OR NAME OF ONE COLUMN (VERTICLE)

4. FIND THE ROW BEGINNING WITH 1900 AND DRAW AN ARROW POINTING TO IT.

USING CHARTS AND TABLES

FINDING WHAT YOU WANT IS EASY IF YOU FOLLOW THESE STEPS:

1. READ ANY INSTRUCTIONS
2. PUT ONE FINGER ON THE ROW YOU WANT
3. PUT THE OTHER FINGER ON THE COLUMN YOU WANT
4. FOLLOW THE ROWS AND COLUMNS WITH YOUR FINGERS UNTIL THEY MEET.

SPEEDS OF ANIMALS

Animal	MPH
Cheetah	70
Pronghorn antelope	61
Lion	50
Elk	47.5

Ex: How fast does a lion run?

Row: Lion Column: MPH (Speed)

Answer: 50 mph.

QUESTIONS:

1. HOW FAST DOES A PRONGHORN ANTELOPE RUN?

   ROW:

   COLUMN:

   ANSWER:

2. WHICH ANIMAL RUNS 70 MPH?

   ROW:

   COLUMN:

   ANSWER:

USING CHARTS AND TABLES

IF THERE ARE MANY COLUMNS, IT MAY HELP TO HOLD A PENCIL OR A PIECE OF PAPER ACROSS YOUR ROW. THIS WILL KEEP YOUR PLACE WHILE YOU FIND THE RIGHT COLUMN.

WOOL PRODUCTION

Source: Statistical Reporting Service: U. S. Agriculture Department

	Sheep shorn (1,000)	Shorn wool (1,000 lbs.)	Value ($1,000)	Price per lb. (Cents)	Pulled wool (1,000 lbs.)	Total wool (1,000 lbs.)
1970	19,163	161,587	57,162	35.4	15,200	176,787
1971	19,036	160,156	31,416	19.6	12,000	172.156
1972	18,770	158,506	55,496	35.0	9,700	168,206
1973	17,425	143,738	118,839	82.7	8,000	151,738
1974	15,956	131,382	77,788	59.2	5,700	137,082

QUESTION:

WHAT WAS THE PRICE OF WOOL PER LB. IN 1972?

ROW:

COLUMN"

ANSWER:

REVIEW QUESTIONS

READ EACH QUESTION. PICK THE ANSWER WHICH FITS EACH BLANK. IF YOU CANNOT ANSWER THE QUESTION, LOOK IT UP IN YOUR ALMANAC LESSON. WHEN YOU FINISH, ASK FOR THE TEST AND TAKE IT.

1. ALMANACS CONTAIN:_____.
   A. A COLLECTION OF USEFUL FACTS
   B. MEANINGS OF MANY WORDS
   C. INFORMATION ABOUT A CERTAIN YEAR
   D. BOTH A AND C

2. _____WOULD BE EASY TO FIND IN AN ALMANAC
   A. SPORTS RECORDS B. ELECTION RESULTS C. FACTS ABOUT FOREIGN COUNTRIES D. ALL OF THESE

3. TO FIND SOMETHING IN AN ALMANAC, CHECK THE _____.

4. SUBJECTS IN THE ALMANAC MAY BE DIVIDED INTO SMALLER PARTS CALLED_____.
   A. SUB-HEADINGS B. CHAPTERS C. TABLES D. NONE OF THESE.

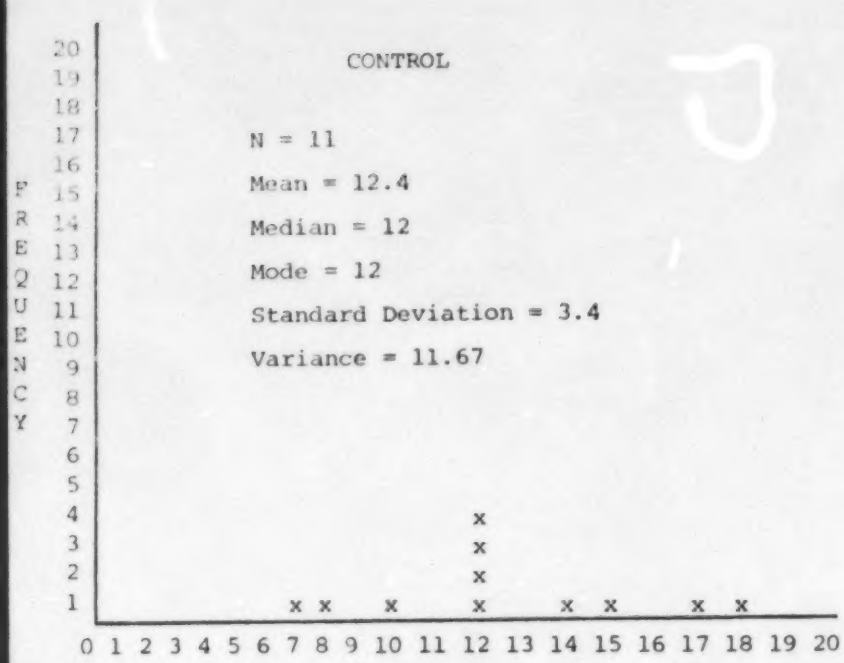
5. ALMANAC CHARTS AND TABLES ARE EASY TO USE IF YOU_____.
   A. READ THE INSTRUCTIONS B. FIND THE RIGHT ROW AND COLUMN C. USE SOMETHING STRAIGHT TO KEEP YOUR PLACE
   D. ALL OF THESE.

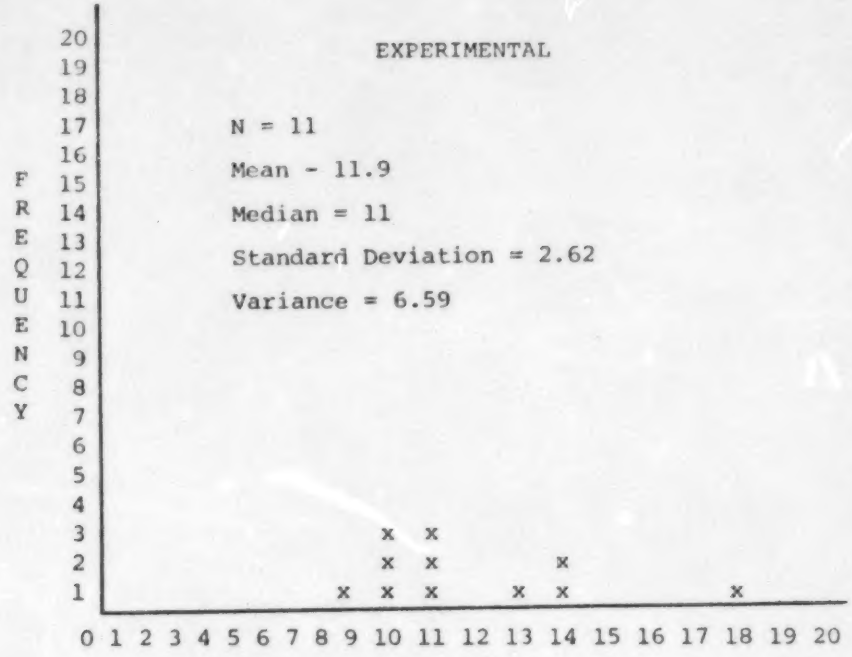
Appendix C

Frequency Distributions of Scores

APPENDIX C Frequency Distribution of Pretest Scores Based on a possible score of 20

GRADE 5


CONTROL
N = 11
Mean = 12.4
Median = 12
Mode = 12
Standard Deviation = 3.4
Variance = 11.67
FREQUENCY
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20


EXPERIMENTAL
N = 11
Mean - 11.9
Median = 11
Standard Deviation = 2.62
Variance = 6.59
FREQUENCY
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

STATISTICAL TESTS

$t = .37$

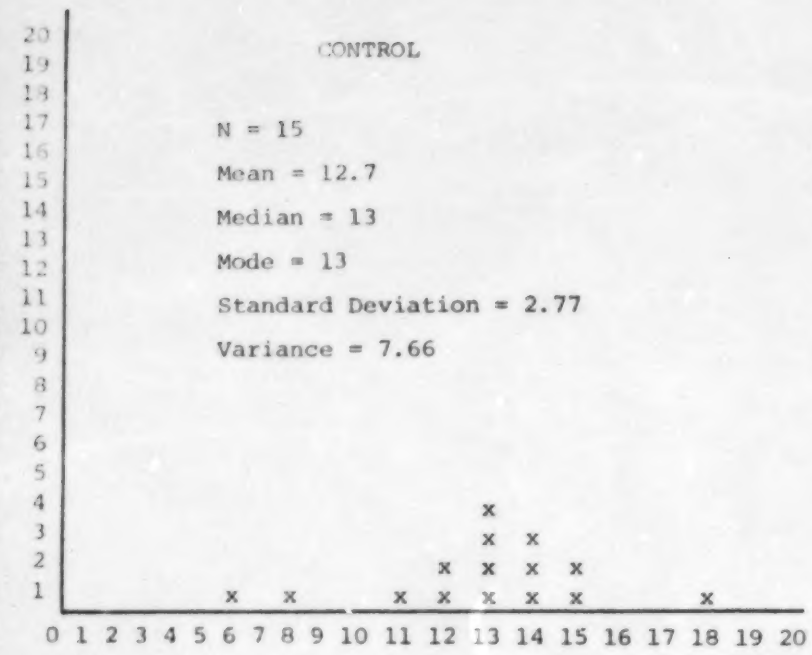
$t_{20,.05} = 1.725$

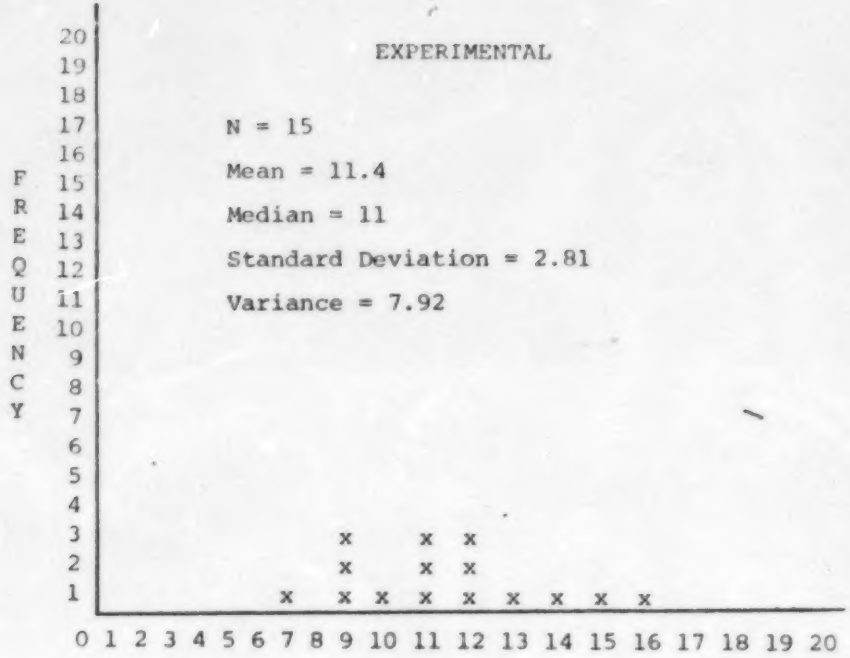
$.37 < 1.725$

There is no significant difference between the two groups.

APPENDIX C Frequency Distribution of Pretest Scores Based on a possible score of 20

GRADE 6


CONTROL
N = 15
Mean = 12.7
Median = 13
Mode = 13
Standard Deviation = 2.77
Variance = 7.66
FREQUENCY
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20


EXPERIMENTAL
N = 15
Mean = 11.4
Median = 11
Standard Deviation = 2.81
Variance = 7.92
FREQUENCY
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

STATISTICAL TESTS

$t = 1.11$

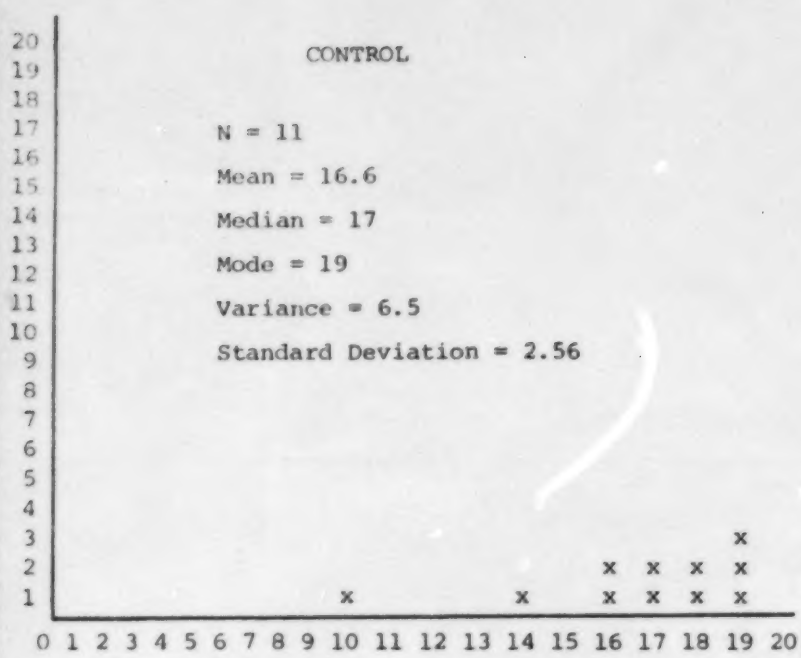
$t_{28,.05} = 1.705$

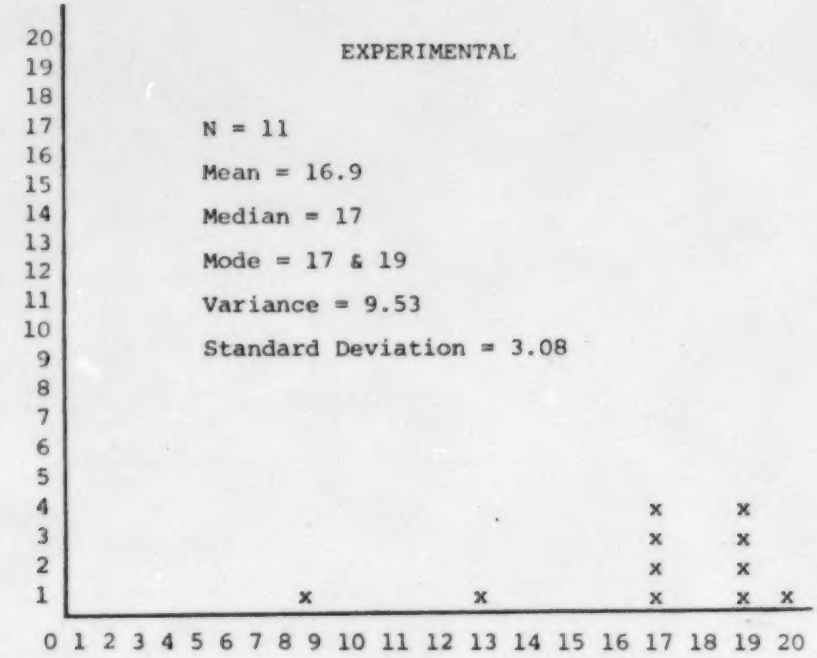
$1.11 < 1.705$

There is no significant difference between the two groups.

APPENDIX C Frequency Distribution of Post-test Scores Based on a possible score of 20

GRADE 5


CONTROL
N = 11
Mean = 16.6
Median = 17
Mode = 19
Variance = 6.5
Standard Deviation = 2.56
FREQUENCY
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20


EXPERIMENTAL
N = 11
Mean = 16.9
Median = 17
Mode = 17 & 19
Variance = 9.53
Standard Deviation = 3.08
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

STATISTICAL TESTS

$t = .236$

$t_{20,.05} = 1.725$

$.236 < 1.725$

There is no significant difference between the two samples.

APPENDIX C Frequency Distribution of Post-test Scores Based on possible score of 20

GRADE 6

CONTROL

N = 15

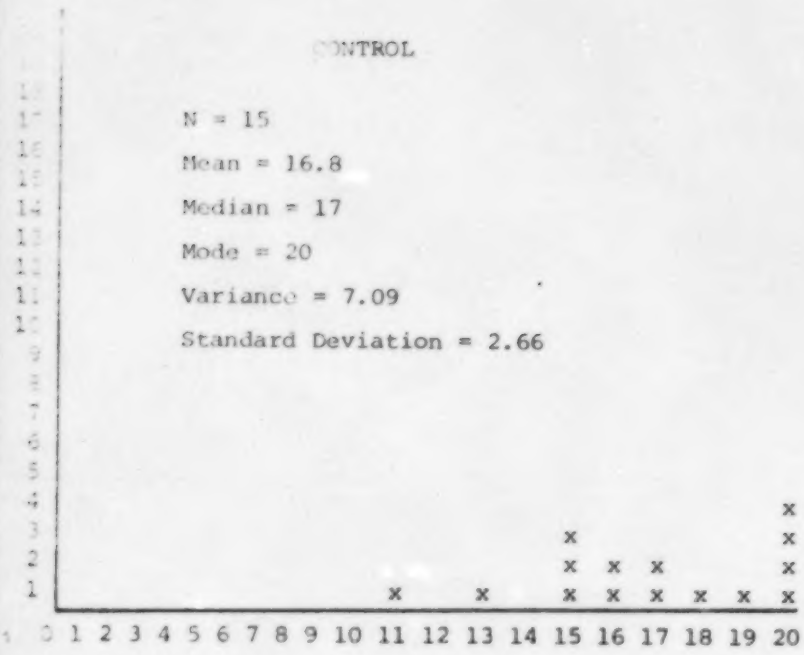
Mean = 16.8

Median = 17

Mode = 20

Variance = 7.09

Standard Deviation = 2.66



EXPERIMENTAL

N = 15

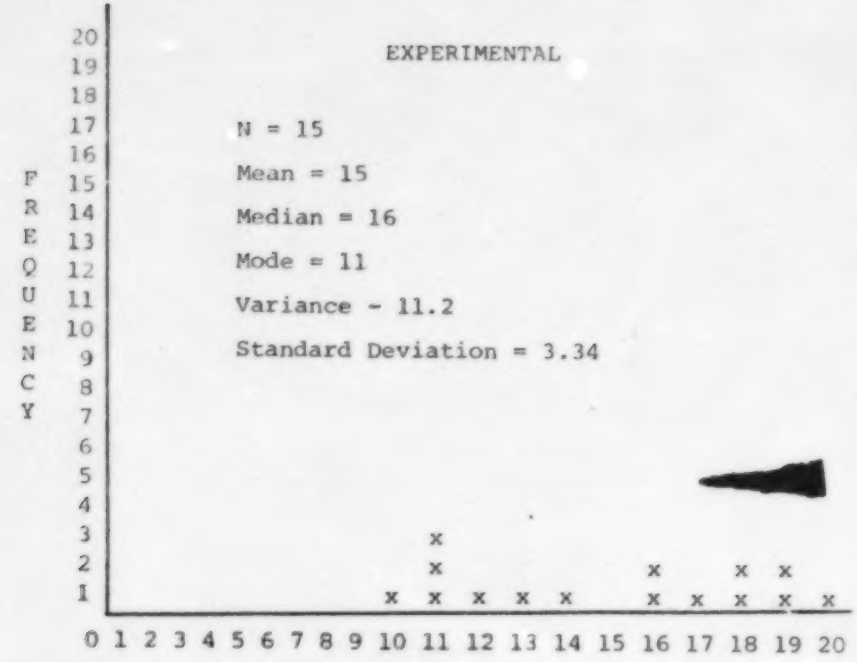
Mean = 15

Median = 16

Mode = 11

Variance - 11.2

Standard Deviation = 3.34



STATISTICAL TESTS

$t = 1.57$

$t_{28,.05} = 1.701$

$1.57 < 1.701$

There is no significant difference between the two samples.